NAEP
NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

Volume 16, Issue 2-8

Measure Up

Winter 2012

Assessment news for middle school teachers

- ***In preparation for the 2014 TEL assessment, selected eighth-grade students in 2012 will participate in a TEL tryout of scenario-based tasks on the computer.***
- ***The TEL task tryout will engage students through the use of multimedia presentations, such as video, audio, and interactive simulations, and will be administered to students entirely on a computer.***

NAEP Technology and Engineering Literacy (TEL) Assessment

The first-ever National Assessment of Educational Progress (NAEP) technology and engineering literacy (TEL) assessment is currently under development. The assessment is intended to measure what students know about technology and engineering. The assessment is based on the NAEP technology and engineering literacy framework. As with all NAEP frameworks, the technology literacy framework was developed under the guidance of the National Assessment Governing Board. The NAEP frameworks provide the theoretical basis for the assessments and describe the types of questions that should be included and how they should be designed and scored.

What is TEL?

Technology and engineering have become critical components of 21st-century life. For generations students have been taught about technology and have been instructed on how to use various technological devices. However, there are currently no standardized, nationally representative assessments to provide evidence of what students know about technology and engineering; the roles they play in our lives; and the extent to which students can use technologies and understand how engineers design and develop them.

How is TEL assessed?

Allowing students to demonstrate the wide range of knowledge and skills detailed in the three TEL assessment areas will require a departure from the typical assessment designs used in other NAEP subjects. Students will be asked to perform a variety of computer-based tasks to solve problems within scenarios that reflect realistic situations. These scenario-based tasks are an innovative component of NAEP and range from 10 to 30 minutes in length.

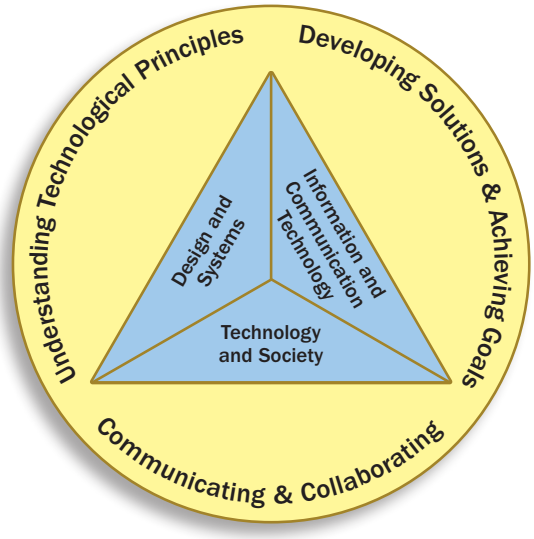
In addition to scenario-based tasks, TEL will also rely on short answer and multiple-choice questions to measure students' knowledge and skills. Because technological and engineering literacy is not always attained in or confined to the classroom, TEL will be accompanied by a questionnaire component that aims to get a better understanding of students' opportunities to learn about technology and engineering both inside and outside the classroom.

Access the interactive NAEP TEL framework at
http://www.nagb.org/publications/frameworks/tech2014-framework/ch_toc/index.html

What Does the NAEP TEL Assessment Measure?

The National Assessment of Educational Progress technology and engineering literacy framework broadly defines technological and engineering literacy as the capacity to use, understand, and evaluate technology as well as to understand technological principles and strategies needed to develop solutions and achieve goals.

This framework is the guide for the development of the TEL assessment and defines what students should know and be able to do with technology. The assessment is designed to assess three interconnected areas of technology and engineering literacy: Technology and Society, Design and Systems, and Information and Communication Technology.



- **Technology and Society** involves the effects that technology has on society and on the natural world and the ethical questions that arise from those effects.
- **Design and Systems** covers the nature of technology, the engineering design process by which technologies are developed, and basic principles of dealing with everyday technologies, including maintenance and troubleshooting.
- **Information and Communication Technology** includes computers and software learning tools, networking systems and protocols, hand-held digital devices, and other technologies for accessing, creating, and communicating information and for facilitating creative expression.

Technology and Engineering Literacy (TEL) Practices

In all three areas of technology and engineering literacy, students are expected to be able to apply particular ways of thinking and reasoning when approaching a problem. These types of thinking and reasoning are referred to as "practices." The framework specifies three kinds of practices students are expected to demonstrate when responding to TEL assessment tasks and questions.

Technology and Engineering Literacy Practices	
Understanding Technological Principles	Focuses on how well students are able to make use of their knowledge about technology.
Developing Solutions and Achieving Goals	Refers to students' systematic use of technological knowledge, tools, and skills to solve problems and achieve goals presented in realistic contexts.
Communicating and Collaborating	Concerns how well students are able to use contemporary technologies to communicate for a variety of purposes and in a variety of ways, working individually or in teams, with peers and experts.

What is Technology and Engineering Literacy (TEL)?

The TEL framework defines literacy as the level of knowledge and competencies needed by all students and citizens in order to be literate about technology and engineering and to function in a technological society. The focus of the TEL framework is not on whether students have the ability to engineer or produce technology in the professional sense. TEL does not address technical knowledge of specific technologies, nor types of engineering expertise taught in specialized courses to prepare some students for postsecondary engineering studies.

Why is TEL important for today's students?

Technology and engineering are increasingly being incorporated into a wide range of school coursework. This includes contemporary science, technology, engineering, and mathematics (STEM) education, as well as subjects such as social studies and language arts. These courses include instruction on the use of computers and information technology to complete school assignments, lessons that examine the role of technology in society, and information on engineering design. Information technologies are also essential tools in workplace and practical contexts.

Because of this growing importance of technology and engineering in the educational landscape, an assessment of technological and engineering literacy is an important addition to NAEP. The technology and engineering assessment opens the door to understanding what students know about technology and engineering in the same way that NAEP already assesses their knowledge and capabilities in reading, mathematics, science, and other subjects.

The questions listed below are just a few examples of the types of questions the National Assessment of Educational Progress (NAEP) technology and engineering literacy (TEL) assessment will aim to answer.

- To what extent can young people analyze the pros and cons of a proposal to develop a new source of energy?
- Can students use the Internet to find and summarize information in order to solve a problem?
- Do students understand how and why new technologies are developed to suit human needs and wants?

What Is The Nation's Report Card?

The Nation's Report Card informs the public about the academic achievement of elementary and secondary students in the United States. Report cards communicate the findings of the National Assessment of Educational Progress (NAEP), a continuing and nationally representative measure of achievement in various subjects over time.

33886.1011.8540540301

This publication was prepared for the National Assessment of Educational Progress by Westat under contract (ED-07-CO-0083) to the National Center for Education Statistics, U.S. Department of Education.

Since 1969, NAEP assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and other subjects. By collecting and reporting information on student performance at the national, state, and local levels, NAEP is an integral part of our nation's evaluation of the condition and progress of education. Only information related to academic achievement and relevant variables is collected. The privacy of individual students and their families is protected, and the identities of participating schools are not released.

If you want to...	Visit...
Learn more about NAEP results	The Nation's Report Card at **http://nationsreportcard.gov**
Learn about the NAEP long-term trend assessment	The Nation's Report Card at **http://nationsreportcard.gov/ltt_2008/ltt0016.asp**
View NAEP data for a particular state or contact your NAEP State Coordinator	The National Center for Education Statistics at **http://nces.ed.gov/nationsreportcard/states**
Access specific results for a grade level, subject, jurisdiction, and/or demographic groups	The NAEP Data Explorer at **http://nces.ed.gov/nationsreportcard/naepdata**
Find information regarding the types of questions used on NAEP assessments or view subject-specific questions	The NAEP Questions Tool at **http://nces.ed.gov/nationsreportcard/itmrlsx**
Download a Sample Questions booklet that contains sample test questions for the upcoming and previous assessments	The National Center for Education Statistics at **http://nces.ed.gov/nationsreportcard/about/booklets.asp**
Learn more about NAEP frameworks and how policy is drafted for each NAEP assessment	The National Center for Education Statistics at **http://nces.ed.gov/nationsreportcard/frameworks.asp**
Offer a comment or suggestion on NAEP	The National Center for Education Statistics mailbox at **http://nces.ed.gov/nationsreportcard/contactus.asp**